16. (3 points)

The loss experience of five similarly sized risks is shown in the table below:

Risk	Aggregate Unlimited Loss	Aggregate Limited Loss
1	30,000	30,000
2	95,000	60,000
3	110,000	90,000
4	160,000	60,000
5	415,000	360,000
Total	810,000	600,000

Limited losses have a per-occurrence limit of 50,000 applied.

a. (1.5 points)

Construct a Limited Loss Table M based on the experience above, displaying entry ratios ranging from 0 to 3 in increments of 0.5 and the corresponding insurance charges.

b. (1.5 points)

An insured similar to the risks above is evaluating three potential policies:

1. A guaranteed cost policy
2. A large dollar deductible policy with a 50,000 per-occurrence limit
3. A retrospectively rated policy with an underlying 200,000 aggregate limit and no per-occurrence limit

Given the following:

- The insured would like to minimize cost
- Maintaining a stable, predictable cash flow is a priority for the insured
- The insured has recently implemented a successful claim severity reduction program

Briefly discuss one advantage and one disadvantage of each of the three policies from the perspective of this insured.

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QUESTION 16	
TOTAL POINT VALUE: 3.0	**LEARNING OBJECTIVE(S): B5, B6**

SAMPLE ANSWERS

Part a: 1.5 points

Sample 1

$r = \frac{A_D}{E(A_D)}$ $\quad E(A_D) = \frac{600{,}000}{5} = 120{,}000 \quad \phi^{LM}(r_{max}) = 0$

$\phi^{LM}(r_i) = \phi^{LM}(r_{i+1}) + (r_{i+1} - r_i)(\%\, risk\ above)$

Risk	r_i
1	0.25
2	0.5
3	0.75
4	0.5
5	3

r	# risks	# risks above	% risks above	$\phi(r)$
0	0	5	100%	1
0.25	1	4	80%	0.75
0.5	2	2	40%	0.55
0.75	1	1	20%	0.45
1	0	1	20%	0.4
1.5	0	1	20%	0.3
2	0	1	20%	0.2
2.5	0	1	20%	0.1
3	1	0	0%	0

$\phi(3) = 0$

$\phi(2.5) = \phi(3) + (3 - 2.5) \times 0.2$

Sample 2

$E(A_D) = \frac{600k}{5} = 120k$

r	$r \cdot E[A_D]$	# risk above	% risk above	$\phi(r)$
0	0	5	100%	1
0.5	60k	2	40%	$\frac{(90-60)+(360-60)}{(5)(120)} = 0.55$
1	120k	1	20%	0.4
1.5	180k	1	20%	0.3
2	240k	1	20%	0.2
2.5	300k	1	20%	0.1
3	360k	0	0%	0

Part b: 1.5 points

Sample 1

- 1 – adv: Stable premium, known at policy inception. Disad: no reduction in premium in case of good loss experience
- 2 – adv: minimize cost as compared to GCP since insured is responsible for losses below deductible, so premium smaller → less taxes paid. Disad: cash flow less stable than GCP since it depends on the number of claims and severity
- 3 – adv: cover all losses as compared to LDD where there is a deductible on each claim. Disad: cash flow less predictable as premium is adjusted as losses develop

Sample 2

- GCP – advantage: the GCP will have the most stable, predictable cash flows. Disadvantage: the cost up front will be higher than the other two policies
- LDD – advantage: retain lower losses while having protection against larger losses. Disadvantage: potential to pay a lot if there are a lot of claims below deductible
- Retro policy – advantage: the reduced severity from their program will likely result in lower actual losses driving down premium. Disadvantage: potential to pay a lot if loss experience is bad

Sample 3

	Advantage	Disadvantage
GCP	Cost is known up front (not subject to change)	Doesn't help to minimize costs or recognize good loss experience
LDD	Low upfront cost	Costs are uncertain as compared to a GCP (losses unknown to be paid)
Retro	Incentive for safety (better safety = lower loss = lower cost)	Premium is subject to fluctuations (not stable throughout the policy period)

EXAMINER'S REPORT

Candidates were expected to be able to calculate a Limited Table M, and then discuss the benefits and drawbacks of guaranteed cost plans, large dollar deductible plans, and retrospective rating plans from the perspective of an insured based on their goals and situation.

Part a

Candidates were expected to construct a Limited Loss Table M using the loss data provided for the given entry ratio range.

Common mistakes included:

- Using unlimited losses or unlimited expected losses or both
- Calculating the excess ratio for the per-occurrence limit, and using this as the insurance charge for r = 3
- Building the table using only the required 7 entry ratios, and not accounting for the percentage of risks above changing at 0.25 and 0.75 as well

- Failing to include a demonstration calculation or formula for how the charges were determined.

Part b

Candidates were expected to provide an advantage and a disadvantage for each of the three policies based on the priorities of the insured.

Common mistakes included:

- Stating that the guaranteed cost policy would be the least expensive, or would have unstable cash flows
- Stating the LDD policy minimizes cost without making it clear that "cost" referred to premium or justifying why the overall cost was lower (such as the deductible losses decreasing due to the severity reduction program)
- Stating general features of a policy without indicating why that feature was either an advantage or disadvantage (such as the need to pay losses under a deductible, or that claim adjustment is handled by the insurer)
- Having disadvantages for the LDD or Retro stating that less or no loss would fall into the excess layer or over the aggregate limit, without tying it to the pricing of these layers
- Misunderstanding the nature of the LDD per-occurrence limit or the Retro aggregate limit, and the loss layers that impacted the insured vs. the insurer.